

Emanuele Rossi

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Education

Imperial College London

Oct 2020 – Feb 2024

Ph.D. in Computer Science – Supervisor: Prof. Michael Bronstein

- My research focused on the development of new **Graph Neural Networks** methods for large-scale real-world applications
- My work has been published at top conferences including ICML, ICLR, AAAI and RecSys

University of Cambridge

Oct 2018 – Jun 2019

Master in Advanced Computer Science – Supervisor: Prof. Pietro Liò

- Graduated with **Distinction (4.0 GPA)**
- Thesis: "**Graph Deep Learning for ncRNA data**" ([published](#) [🔗](#) at KDD 2019 GDL workshop)

Imperial College London

Oct 2015 – Jun 2018

Bachelor in Computer Science

- Graduated with **First Class Honors (4.0 GPA)**

Experience

Machine Learning Researcher

NYC (remote)

VantAI

Jan 2024 – Present

- **Co-led development of Neo-1** [🔗](#), a state-of-the-art all-atom latent diffusion model for multimodal structure prediction and de-novo generation of biomolecular complexes.
 - **Model Design:** Led the design and exploration of model architectures, diffusion formulations, and inference methods, establishing efficient experimentation workflows.
 - **Large-scale Training:** Managed distributed training across 100+ GPUs, optimizing computational resources and model performance.
 - **Data Engineering:** Contributed to the development of high-quality, leakage-free biomolecular datasets (see [Plinder](#) [🔗](#), [Pinder](#) [🔗](#)) used to train the model.
 - **Mentoring:** Mentored and supervised 3 PhD interns who made substantial contributions to the project.
 - **Cross-functional Collaboration:** Partnered closely with computational biologists and chemists to assess and enhance model applicability and accuracy.

Machine Learning Researcher

London

Twitter

Jun 2019 – Feb 2023

- Research and development of **graph neural networks**, working on both **fundamental research** and **production systems**
- Successfully **scaled GNN architectures** to process Twitter's social graph with **tens of billions of edges**
- Designed and deployed an **embedding-based recommendation system** for the "who to follow" feature, resulting in **1.2M+ additional daily follow actions** on the platform

Machine Learning Researcher

London

Fabula AI

Mar 2019 – Jun 2019

- Developed **novel graph deep learning models** for **fake news classification**
- Fabula AI was acquired by Twitter in June 2019

Software Engineering Intern

California

Google

Jul 2017 – Oct 2017

- Worked in the **Google Play Store** infrastructure team

Selected Publications

- *J. Durairaj et al.* [PLINDER: The Protein-Ligand Interactions Dataset and Evaluation Resource](#) [↗](#). *ICML ML for Life and Material Science Workshop 2024*. Comprehensive dataset and benchmark for protein-ligand interaction prediction.
- *E. Rossi et al.* [Edge Directionality Improves Learning on Heterophilic Graphs](#) [↗](#). *Learning on Graphs Conference 2023*. Novel framework for graph neural networks on directed graphs, showing significant improvements on heterophilic graphs.
- *B. Chamberlain, S. Shirobokov, E. Rossi et al.* [Graph Neural Networks for Link Prediction with Subgraph Sketching](#) [↗](#). *ICLR 2022, Oral (top 5%)*. First GNN model to scale link prediction to graphs with millions of nodes thanks to sketching, a hashing technique which enables efficient computation of subgraph statistics.
- *E. Rossi et al.* [Temporal Graph Networks for Deep Learning on Dynamic Graphs](#) [↗](#). *ICML 2020 GRL Workshop*. Novel model for deep learning on dynamic graphs (>1k [Github stars](#) [↗](#)). Adopted by [memgraph](#) [↗](#) (graph analytics company) and used by GraphCore to [benchmark their hardware](#) [↗](#).
- *E. Rossi*, F. Frasca* et al.* [SIGN: Scalable Inception Graph Neural Networks](#) [↗](#). *ICML 2020 GRL Workshop*. First graph deep learning model to scale to graphs with billions of edges. Used in [production by Airbnb](#) [↗](#).

Projects and Awards

LeadTheFuture

Jun 2018 – Mar 2023

Co-Founder

- [LeadTheFuture](#) [↗](#) is a **non-profit mentoring organization** and the **largest merit-based STEM community in Italy**, with more than **200 mentors** (engineers, researchers, and entrepreneurs) and **500 selected mentees**
- Our work has been featured in [Forbes](#) [↗](#)

Talks and Blog Posts

- I have written a series of blog posts on my research ([full list](#) [↗](#)) and have been invited to give over 10 talks ([full list](#) [↗](#))